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Mr. Chairman and members of the committee, thank you for giving me this opportunity to present my views on the proposed legislation.

Let me introduce myself – I graduated from King Edward Medical College in Pakistan. I had my training at the National Hospital of Neurological diseases, from 1962 to 1966, and practiced in the United Kingdom. I was admitted as a member of the Royal College Physicians of London. I immigrated to the United States in 1971. I was on the Neurology Faculty of Rush University, in Chicago, from 1971 to 1974. From 1975 to 1992, I was in a private practice of Neurology in Pueblo, Colorado. In addition, I served on the Board of Directors of the Colorado Medical Society, as well as the Board of Parkview Regional Medical Center of Pueblo, Colorado. I was also appointed to the Colorado Health Data Commission by the Governor of Colorado and confirmed by the Colorado Senate. In 2003, President George W. Bush appointed me as the United States Delegate to United Nations Commission on Human Rights.

I was the managing partner of my and my partners' Neurology/Neurosurgery group, and I was closely involved in the running and the operations of Parkview Hospital. I had a significant role in turning around that hospital, which had previously was failing, and in building it into a vibrant, leading regional medical center. I was also in charge of a freestanding CT Scan lab, as well as the later addition of an MRI. In 1985, I founded a health plan named Qual-Med, which evolved into HealthNet. I served as Chairman and CEO of both companies.

In 1997, the Smithsonian Computerland Museum awarded me a medal in healthcare information technology innovation. HealthNet and I, as its CEO, were also finalists for the Smithsonian Award in healthcare technology innovation, because of our work in algorithms-based phone triage system. I retired from HealthNet in 1999, by which time, HealthNet was a Fortune 200 company.

In 1999, I founded HealthTrio, which is a healthcare information technology company. We develop modern, core administrative systems for health plans and an internet-based program to connect physicians, hospitals, health plans, employees, and health insurance brokers. In 2000, we started developing a Personal Health Record/Electronic Health Record ("PHR/EHR"). The development of these programs was successfully completed, and last year, we actually achieved a complete re-write of these programs and integrated SNOMED into the PHR/EHR.

I have had the good fortune of participating in the delivery of healthcare in the United States in all phases: as a consumer, a physician, an academic, as an operator of a physicians' group, an operator of a free standing facility, founder and operator of a major health plan, close involvement in the operation of a medical center, and founder of a successful healthcare technology company.

This diversity of experience has allowed me to observe, first hand, the delivery of healthcare at every level, including the flow of information, and its current limitations in physicians' offices, hospitals, freestanding facilities, and health plans. More importantly, this experience has allowed me to observe the gaps in care. Such gaps result in poor care. Resources are wasted due to lack of adequate healthcare information technology.

The introduction of the PHR/EHR, as envisioned in this bill, will start bridging those gaps and commence the transformation of healthcare delivery, which is sorely needed in this country.

To fully understand the role of healthcare information technology in the delivery of healthcare, one should clarify the differences between the PHR/HER, on one hand, and the Electronic Medical Record ("EMR"), on the other hand. The PHR/EHR and EMR, while distinct, are complementary to each other.

The EMR consists of all information relating to clinical encounters between the patient and the provider. The information recorded and available is related to the providers using that particular EMR. The size of the EMR may vary from an EMR being used by a single physician, group of physicians, a hospital, or a large system, like the Veterans Administration system. The information is profusely detailed and is the medico-legal record of the care given. The information, which is retrieved from a single source, is limited only to that information entered into the system by the providers using that single system. It is conceivable that the EMR could be connected to other EMRs, through RHIOs or the NHIN. However, delays in the speedy retrieval of information from multiple EMRs is likely, if not guaranteed, and en masse usage of EMRs in this fashion runs the real risk of information overload. Moreover, gaps in the record, both known and unknown, will exist. For example, one such gap is a lack of EMRs in the physicians' offices (currently, only 10% to 15% of the physician offices have EMR capabilities). Another gap is a lack of connectivity or interchange of data between various EMR networks. In addition, the consumer has no ability to make direct input on a regular and sustainable basis. In the exchange of the data between systems, privacy issues may be difficult to resolve. Briefly stated, the EMR has great depth, but limited width.

The PHR/EHR starts out as a journal or questionnaire entry by the consumer/patient. Unlike the EMR, which is provider-centric, the PHR/EHR is patient-

centric. The information entered by the patient is supplemented with data extracted from claims information that has been submitted by providers to health plans. This process has the virtue of creating a complete longitudinal record of all encounters between the patient and various providers, spanning all providers, irrespective of whether they belong to one physicians' group or different ones. It spans various providers located in different geographical areas, as well as various specialties. The clinical information present in the PHR/EHR can be supplemented by importing clinical information using HL-7 messaging or custom interfaces from the EMRs of the providers, such as hospitals, physicians, labs, imaging centers, PBMs, and free standing facilities. In this process, information, which is imported, can be pre-selected as needed for continuing care of the patient. On the other hand, information which has no relevance for future care (including unimportant nursing and physician notes) is not included in the PHR/EHR, thus avoiding clutter and information overload. This arrangement allows the treating physician to have prompt, efficient, easy access to the summary of all healthcare encounters of a patient in one place. Privacy issues are resolved by giving the patient complete online control – the patient has the ability to grant (or not grant) permission to various individuals, including care-givers, access to parts of the record as pre-determined, by the patient on a need-to-know basis. Briefly stated, the PHR/EHR has full width, with limited depth.

The PHR/EHR, by allowing the direct input of information by the patient into the PHR/EHR, allows inclusion of valuable information in the record on continuing basis. It also engages the patient to participate in their care. The Return on Investment ("ROI") is lucrative. One of our clients (the Mercy System in St. Louis) provided a PHR system to one of their employers in the manufacturing industry, with very impressive results (health care costs were reduced by 25%). This case study, with the ROI, is included as Attachment One to this testimony.

In addition, the opportunity to integrate SNOMED (which HealthTrio has already done) in the PHR/EHR is invaluable. The benefits of doing so opens all sorts of doors to improve the quality of care and reduce the costs. These benefits are explained in more detail in Attachment Two.

So far, any attempts at the reform of healthcare have invariably centered around the reform of healthcare financing, rather than addressing the root causes of poor and expensive care. This legislation is a giant step towards elimination of the barriers to high quality, cost-effective care. We are fortunate to have the finest healthcare system in the world, with very well-trained care providers, availability of state-of-the-art medical technology, innovative drugs, excellent access to medical facilities, and a national will to provide enough funding. All these advantages are being compromised though because of a lack of effective electronic health records. The absence of electronic health records creates an environment that prevents proper coordination of care, allowing

inappropriate, ignorant care that is duplicative and wasteful, alongside unnecessary errors of various types, including medication errors.

In the pre-internet era, at Qual-Med, we created a rudimentary EHR, which was accessible only internally, and yet, the Qual-Med medical directors were able to use the information to increase significantly the quality of care and lower costs. The effects were consistent from one geographical area to another. The functionalities proposed in this legislation can achieve even greater strides and are very appropriate and necessary. Qual-Med, a small privately founded health plan, was able to outperform much larger plans because of this rudimentary EHR. Besides the ability of consumers to input their information into the PHR/EHR, and the adding of clinical information from the claims through data extraction to the PHR/EHR, it is critical that physicians be able to view the record (with the permission of the patient) in order to initiate any interventions and add any notes. The online availability of the PHR/EHR enhances the value and increases adoption of the PHR/EHR, both by patients and physicians. To reap the full benefits of the PHR/EHR, universal adoption is ideal.

Attachment One

Case Study: ROI through Adoption of the HealthTrio *connect*™ PHR

A St. Louis-based health plan, providing coverage for 230,000 lives, was faced with the challenge of attracting and retaining accounts in a marketplace dominated by profit-challenged employers, many of whom have been considering dropping their health insurance benefit completely in order to increase revenue. The health plan decided that by improving the personal health of its patient population through a health management program, it could keep its products affordable for its subscribers and their employers. As a result, the health plan created a health improvement program, with a patient-centered approach to healthcare that focuses on patients taking charge of their own health.

After an exhaustive search for enabling technology, the health plan chose HealthTrio *connect*™ PHR, an Internet-based health management tool from HealthTrio. HealthTrio *connect*™ PHR was chosen because of its unique cross-stakeholder PHR, the depth of functionality in the patient portal, and the product's short implementation period. This decision was quickly validated as, in its first year, the program returned remarkable results with high user participation, compliance, and cost savings.

The program was developed based on the premise that members should be both accountable and responsible for wellness and health behaviors. It was designed to:

- Foster a corporate culture that focuses on wellness and rewards employees who get and stay healthy;
- Offer incentives that include richer benefits and reduced out-of-pocket expenses to members who agree to manage their health; and
- Provide consumers with online tools. HealthTrio *connect*'s™ PHR enables consumers to record health activities, set reminders, and access customized health information on topics relevant to each individual health situation.

In order to qualify for participation in the program, employees used the Internet to fill out an eligibility questionnaire and complete a health risk assessment ("HRA") with questions related to key health areas such as cholesterol, weight management, diabetes, smoking, and seat belt usage.

The HRA then provided the following: a personalized report, good habit score, list of good habits, list of changes to reduce health risk, recommendations for preventive screenings and narrative explanations. Employees used the HealthTrio *connect*™ PHR to create an action plan, monitor personal goals and activities, and access health information.

The pilot employer was eager to head off an expected 28% increase in its health costs. Initially, they were focused on the short-term. As the program progressed they started to see the benefit of thinking long-term and working to enhance their employees' overall health, and thereby reducing avoidable health care costs. They communicated their goals to employees to avoid making them nervous about a new program and achieved 76% enrollment in this program. Key messages included:

- Health insurance is part of compensation, which can reduce take-home pay;
- While we are prepared to share the risk for unavoidable health conditions, we should not ask fellow employees to share the cost of unhealthy behaviors, like smoking and failure to wear a seatbelt;
- Good personal health is as important as job safety; and
- We can only offer better benefits if you do your part.

In order to ease the transition to a new program, employees were given lower co-pays and lower than expected monthly contribution levels as an incentive for joining. To ease concerns about employee access to the Internet, the company installed, at little cost, PCs on-site, manned by employees trained on the enrollment process and use of the HealthTrio *connect*™ PHR. The company also supported the program with newsletters, weight loss contests, a benefit fair and subsidized health promotion classes such as smoking cessation classes.

The company saw an increased awareness by employees of health issues and the link between health behavior and health care costs. Increased awareness of current medical conditions, and a goal-oriented environment focused on long-term wellness, caused employees to make positive changes. Lifestyles and habits that trigger preventable disease including tobacco usage, poor diet, and lack of exercise began to change, and results were astounding.

Results

The health plan chose initially to pilot this approach in its manufacturing base, the most cash-strapped segment of its employer customers. In this largely blue-collar community, it was estimated that over 50% of the employees were not "regular" computer users. However, about 76% of employees and their spouses signed up to participate. Of those who signed up, participation remained high throughout the year.

Full period compliance rates for key health maintenance and improvement measures among this population were dramatic:

Health Issue/Program	Compliance Rate
Cholesterol Screening	73%
Tobacco Cessation	63%
Weight Loss	79%
Diabetes – A1c Testing	75%
Mammogram Screening	81%
Pelvic / PAP Exam	85%
Prostate Exam	91%
Colon Rectal Exam	80%

Over 85% of those participating in this program accessed their on-line health information at least twice that year. Consumers welcomed the opportunity to participate in programs that improved their overall health while lowering their monthly health insurance premiums. These results underscore that with the proper kind of integrated system support, consumers welcome the opportunity to participate in programs that improve their overall health. These statistics underscore the extent to which health care is improving as patients engage in these health and disease management initiatives.

Importantly, these initiatives have not only improved health and wellness – they have had an impressive effect on the bottom line of both the health plan and its participating employees and employers. The employers and employee groups serviced by the health plan are long-term customers with well established trends and baselines. Based on historic data, the health plan had well understood actuarial projections for medical costs, which were expected to rise significantly without introduction of the PHR-based health care management approach. By utilizing this approach, the employer experienced a 25% decrease in medical expenditures. Savings in medical costs for this employer were $45 per member per month ($540 per member per year):

Service Type	Previous Year PMPM	Program Year PMPM	Savings
Inpatient	$ 62	$ 22	$ 40
Outpatient	$ 50	$ 45	$ 5
Professional	$ 51	$ 45	$ 6
RX	$ 15	$ 21	$ (6)
Total	**$ 178**	**$ 133**	**$ 45**

The results are compelling and much better than originally anticipated and expected. The health plan began offering the health improvement program as its core product to an ever-increasing number of patients and organizations that understand the magnitude of both the financial and health benefits. The health plan's adoption of the PHR shows that supporting the concepts of enhancing the health and productivity of employees by providing personalized, real-time tools that empower patients to take control of their own health delivers what is most sought: ***better health, better health care, happier patients, and lower costs.***

Attachment Two

SNOMED

SNOMED stands for "Systematized Nomenclature of Medicine." SNOMED is a data dictionary/vocabulary with over 370,000 words, concepts, and phrases. This project was initiated about twenty years ago by the American College of Pathology. The National Health Service of the United Kingdom, the National Library of Medicine, the Department of Health and Human Services, and other national health systems later joined the American College of Pathology in developing this universal medical language. SNOMED allows other coding systems (such as ICD-9 and ICD-10, CPT codes, etc), which are distinct from and incompatible with each other, to be integrated together under the SNOMED coding in one unified language.

The use of SNOMED with the PHR/EHR provides transformational opportunities to improve further the quality of care and reduce cost. The use of SNOMED enables ***clinical information to be encoded*** and allows an integrated/associative, electronic review of the data. What can be potentially achieved with SNOMED capability is briefly outlined below.

A. Outcomes Measurements

The presence of ***encoded clinical data on an electronic platform*** allows, with limited effort, the use of reporting programs which will generate outcome measurements relating to specific conditions and various interventions in the entire plan population. Currently, the outcome measurements studies (both prospective and regression studies) are done on a limited basis and usually over a limited patient population for specific, short time periods due to the extensive effort required to collect and analyze data. The ability to measure outcomes in a large population with ease and timeliness is the elusive "Holy Grail" of modern medicine. With the ability to measure the various outcomes, one could easily do the following:

1. Compare the effectiveness and cost of care as claims or cost data is embedded in the EHR, versus the drawbacks of alternate management for a specific condition(s). This comparison will lead to more widespread practice of evidence-based medicine.

2. The providers could be easily profiled for the quality and cost-effectiveness of care provided by them. This profiling provides the opportunity to impact and intervene on the practice patterns of providers with poor outcomes.

3. The comparison of the efficacy and side-effects of various drugs within the same drug group (e.g. statins) or new drugs versus older and less expensive ones.

4. The cost-effectiveness of workups for diagnostic purposes (such as x-rays versus CT Scans versus MRIs to diagnose back pain)could be determined.

B. Integration and Presentation of Data

SNOMED coding allows data to be collected from disparate sources, such as clinical components of the claims data, direct input by members, data collection through interfaces such as HL7, and other interfaces to be integrated with data from hospitals, labs, PBMs, imaging centers and other outpatient facilities. The data is fully and properly integrated/associated and presented:

1. The member interface can be tailored to members' needs and the data presented will be specifically relevant to the members' needs.

2. The EHR presentation to the providers can be tailored to their specialty and allows them to review the pertinent information. This presentation makes the process time-efficient. Additional information is available if the provider needs it.

C. Improved Clinical Data Protection

With the advent of patient web access to personal health records, a critical success factor is the user's comfort in having their data available on the Web. How well the information is protected is critical. SNOMED codification of the data allows patients to protect entire sections of their health records by selecting an entire category for protection. For example, the patient can protect all medications, visits, illness/conditions, procedures, and other related events for the entire mental health section by protecting that section from designated individuals through selecting the SNOMED "mental health" category.

D. Eliminates Waste and Fraud

With the ability to obtain direct input from the patient, which is encoded and then compared with the provider's input, any discrepancies are thereby revealed and reconciled, effectively ending the need for various files in disparate locations. Also, the ready access of information in the EHR has the potential to eliminate the ordering of duplicate tests and medications.

E. Disease Management and Care Management

With clinical information available in an encoded format, opportunities to introduce disease management initiatives for managing additional diseases would become available. The current management of chronic diseases would improve radically with significantly better results at lower costs. Caregivers, with their patients joining the program online, can integrate information with overall management of these patients' health conditions, likely obtaining better health results. New and more efficient workflow can be designed around the EHR. Similarly, the current care management programs, to identify the gaps in care and corrective action, would have to be redesigned with new workflow, based around the availability of encoded clinical information on an electronic platform. This redesign would allow the introduction of care management programs easily and in a sustained and considerably more efficient manner.